

CLAIMS

What is claimed is:

1. A method of providing a media session channel for communication of real time streaming media data from a remote client to a client served by an address translation firewall, the method comprising:
 - receiving a ping datagram originated by the client that identifies the client;
 - extracting a source network address and a source port number from the ping datagram;
 - receiving a session signaling message from a remote device, the session signaling message identifying the client and including a caller network address and a caller port number established for receipt of media session datagrams; and
 - sending a client session signaling message to the client utilizing the source network address and source port number in response to receipt of the session signaling message from the remote device.
2. The method of claim 1:
 - further comprising:
 - extracting a remote device source network address and a remote device source port number from the session signaling message;
 - determining whether the caller network address matches a source network address;
 - determining a designated network address and designated port number to which the client is to send media session datagrams, the designated network address and the designated port number being:
 - the caller network address and the caller port number if the caller network address matches the remote device source network address; and
 - a relay server network address and a relay server port number if the caller network address does not match the remote device source network address; and
 - wherein:

the client session signaling message includes the designated network address and designated port number.

3. The method of claim 2, further comprising:

receiving a response message originated by the client that includes a client network address and a client port number for receipt of media session datagrams; determining a caller designated network address and a caller designated port number to which the caller is to send media session datagrams, the caller designated network address and the caller designated port number being:

the client designated network address and the client designated port number if the caller network address matches the remote device source network address; and a relay server network address and a relay server port number if the caller network address does not match the remote device source network address; and

sending a remote device response message to the remote device that includes the caller designated network address and the caller designated port number.

4. A method of sending a call signaling message to a client independent of whether the client is served an address translation firewall, the method comprising:

receiving a registration message from the client, the registration message identifying a network address of the client;

extracting a source network address and a source port number from the registration message;

comparing the a designated network address to the source network address;

receiving a directory inquiry message from a remote device identifying the client;

providing a directory inquiry response message to the remote device, the

directory inquiry response message including a signaling address, the signaling address being:

the network address if the network address and the source network address are the same network address; and

a directory server network address if the network address and the source

15 network address are not the same.

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1 5. The method of claim 4, further comprising:
2 receiving a session signaling message from a remote device and for the client;
3 and
4 sending a client session signaling message to the client utilizing the source
5 network address and the source port number.

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1 6. The method of claim 5, wherein:
2 the session signaling message includes a caller network address and a caller
3 port number established for receipt of media session datagrams; and
4 the method further includes:
5 extracting a remote device source network address and a remote device
6 source port number from the session signaling message;
7 determining whether the caller network address matches the remote device
8 source network address;
9 determining a designated network address and designated port number to
10 which the client is to send media session datagrams, the designated network address
11 and the designated port number being:
12 the caller network address and the caller port number if the caller network
13 address matches the remote device source network address; and
14 a relay server network address and a relay server port number if the caller
15 network address does not match the remote device source network address; and
16 wherein the client session signaling message includes the designated network
17 address and designated port number.

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1 7. The method of claim 6, further comprising:
2 receiving a response message originated by the client that includes a client
3 network address and a client port number for receipt of media session datagrams;
4 determining a caller designated network address and a caller designated port

number to which the caller is to send media session datagrams, the caller designated network address and the caller designated port number being:

the client network address and the client port number if the caller network address matches the remote device source network address; and

a relay server network address and a relay server port number if the caller network address does not match the remote device source network address; and

sending a remote device response message to the remote device that includes the caller designated network address and the caller designated port number.

8. The method of claim 4, further comprising:

assigning a session identifier to the session in response to the directory inquiry;

associating the session identifier to the client; and

providing the session identifier to the remote device in the directory inquiry response message;

9. The method of claim 8, further comprising:

receiving a session signaling message from the remote device includes the session identifier;

identifying the client to which the session identifier is associated; and

sending a client session signaling message to the client utilizing the source network address and source port number.

10. The method of claim 9, wherein:

the session signaling message includes a caller network address and a caller port number established for receipt of media session datagrams; and

the method further comprises:

determining whether the caller network address matches a remote device source network address;

determining a designated network address and designated port number to which the client is to send media session datagrams, the designated network address

9 being:

10 the caller network address and the caller port number if the caller network
11 address matches the remote device source network address; and

12 a relay server network address and a relay server port number if the caller
13 network address does not match the remote device source network address; and

14 wherein the client session signaling message includes the designated network
15 address and the designated port number.

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1 11. The method of claim 10, further comprising:

2 receiving a response message originated by the client that includes a client
3 network address and a client port number for receipt of media session datagrams;

4 determining a caller designated network address and a caller designated port
5 number to which the caller is to send media session datagrams, the caller designated
6 network address and caller designated port number being:

7 the client network address and the client port number if the caller network
8 address matches the remote device source network address; and

9 a relay server network address and a relay server port number if the caller
10 network address does not match the remote device source network address; and

11 sending a remote device response message to the remote device that includes
12 the caller network address and the caller port number.

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1 12. A director server for providing a media session channel for communication of real
2 time streaming media data from a remote client to a client served by an address
3 translation firewall, the directory server comprising:

4 means for receiving a ping datagram originated by the client that identifies the
5 client;

6 means for extracting a source network address and a source port number from
7 the ping datagram;

8 means for receiving a session signaling message from a remote device, the
9 session signaling message identifying the client and including a caller network address

and a caller port number established for receipt of media session datagrams; and
 means for sending a client session signaling message to the client utilizing the
 source network address and source port number in response to receipt of the session
 signaling message from the remote device.

13. The directory server of claim 12:

further comprising:

means for extracting a remote device source network address and a remote
 device source port number from the session signaling message;

means for determining whether the caller network address matches a source
 network address;

means for determining a designated network address and designated port
 number to which the client is to send media session datagrams, the designated network
 address and the designated port number being:

the caller network address and the caller port number if the caller network
 address matches the remote device source network address; and

a relay server network address and a relay server port number if the caller
 network address does not match the remote device source network address; and

wherein:

the client session signaling message includes the designated network
 address and designated port number.

14. The directory server of claim 13, further comprising:

means for receiving a response message originated by the client that includes a
 client network address and a client port number for receipt of media session datagrams;

means for determining a caller designated network address and a caller
 designated port number to which the caller is to send media session datagrams, the
 caller designated network address and the caller designated port number being:

the client designated network address and the client designated port number
 if the caller network address matches the remote device source network address; and

9 a relay server network address and a relay server port number if the caller
10 network address does not match the remote device source network address; and
11 means for sending a remote device response message to the remote device that
12 includes the caller designated network address and the caller designated port number.
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1 15. A directory server for sending a call signaling message to a client independent of
2 whether the client is served an address translation firewall, the directory server
3 comprising:

4 means for receiving a registration message from the client, the registration
5 message identifying a network address of the client;

6 means for extracting a source network address and a source port number from
7 the registration message;

8 means for comparing the a designated network address to the source network
9 address;

10 means for receiving a directory inquiry message from a remote device identifying
11 the client;

12 means for providing a directory inquiry response message to the remote device,
13 the directory inquiry response message including a signaling address, the signaling
14 address being:

15 the network address if the network address and the source network address
16 are the same network address; and

17 a directory server network address if the network address and the source
18 network address are not the same.
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1 16. The directory server of claim 15, further comprising:

2 means for receiving a session signaling message from a remote device and for
3 the client; and

4 means for sending a client session signaling message to the client utilizing the
5 source network address and the source port number.
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1 17. The directory server of claim 16, wherein:
2 the session signaling message includes a caller network address and a caller
3 port number established for receipt of media session datagrams; and
4 the directory server further comprises:
5 means for extracting a remote device source network address and a remote
6 device source port number from the session signaling message;
7 means for determining whether the caller network address matches the
8 remote device source network address;
9 means for determining a designated network address and designated port
10 number to which the client is to send media session datagrams, the designated network
11 address and the designated port number being:
12 the caller network address and the caller port number if the caller network
13 address matches the remote device source network address; and
14 a relay server network address and a relay server port number if the caller
15 network address does not match the remote device source network address; and
16 wherein the client session signaling message includes the designated network
17 address and designated port number.

1 18. The directory server of claim 17, further comprising:
2 means for receiving a response message originated by the client that includes a
3 client network address and a client port number for receipt of media session datagrams;
4 means for determining a caller designated network address and a caller
5 designated port number to which the caller is to send media session datagrams, the
6 caller designated network address and the caller designated port number being:
7 the client network address and the client port number if the caller network
8 address matches the remote device source network address; and
9 a relay server network address and a relay server port number if the caller
10 network address does not match the remote device source network address; and
11 means for sending a remote device response message to the remote device that
12 includes the caller designated network address and the caller designated port number.

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- 1 19. The directory server of claim 5, further comprising:
2 means for assigning a session identifier to the session in response to the
3 directory inquiry;
4 means for associating the session identifier to the client; and
5 means for providing the session identifier to the remote device in the directory
6 inquiry response message;

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- 1 20. The directory server of claim 19, further comprising:
2 means for receiving a session signaling message from the remote device
3 includes the session identifier;
4 means for identifying the client to which the session identifier is associated; and
5 means for sending a client session signaling message to the client utilizing the
6 source network address and source port number.

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- 1 21. The directory server of claim 20, wherein:
2 the session signaling message includes a caller network address and a caller
3 port number established for receipt of media session datagrams; and
4 the directory server further comprises:
5 means for determining whether the caller network address matches a remote
6 device source network address;
7 means for determining a designated network address and designated port
8 number to which the client is to send media session datagrams, the designated network
9 address being:
10 the caller network address and the caller port number if the caller network
11 address matches the remote device source network address; and
12 a relay server network address and a relay server port number if the caller
13 network address does not match the remote device source network address; and
14 wherein the client session signaling message includes the designated network
15 address and the designated port number.

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- 1 22. The directory server of claim 21, further comprising:
2 means for receiving a response message originated by the client that includes a
3 client network address and a client port number for receipt of media session datagrams;
4 means for determining a caller designated network address and a caller
5 designated port number to which the caller is to send media session datagrams, the
6 caller designated network address and caller designated port number being:
7 the client network address and the client port number if the caller network
8 address matches the remote device source network address; and
9 a relay server network address and a relay server port number if the caller
10 network address does not match the remote device source network address; and
11 means for sending a remote device response message to the remote device that
12 includes the caller network address and the caller port number.

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